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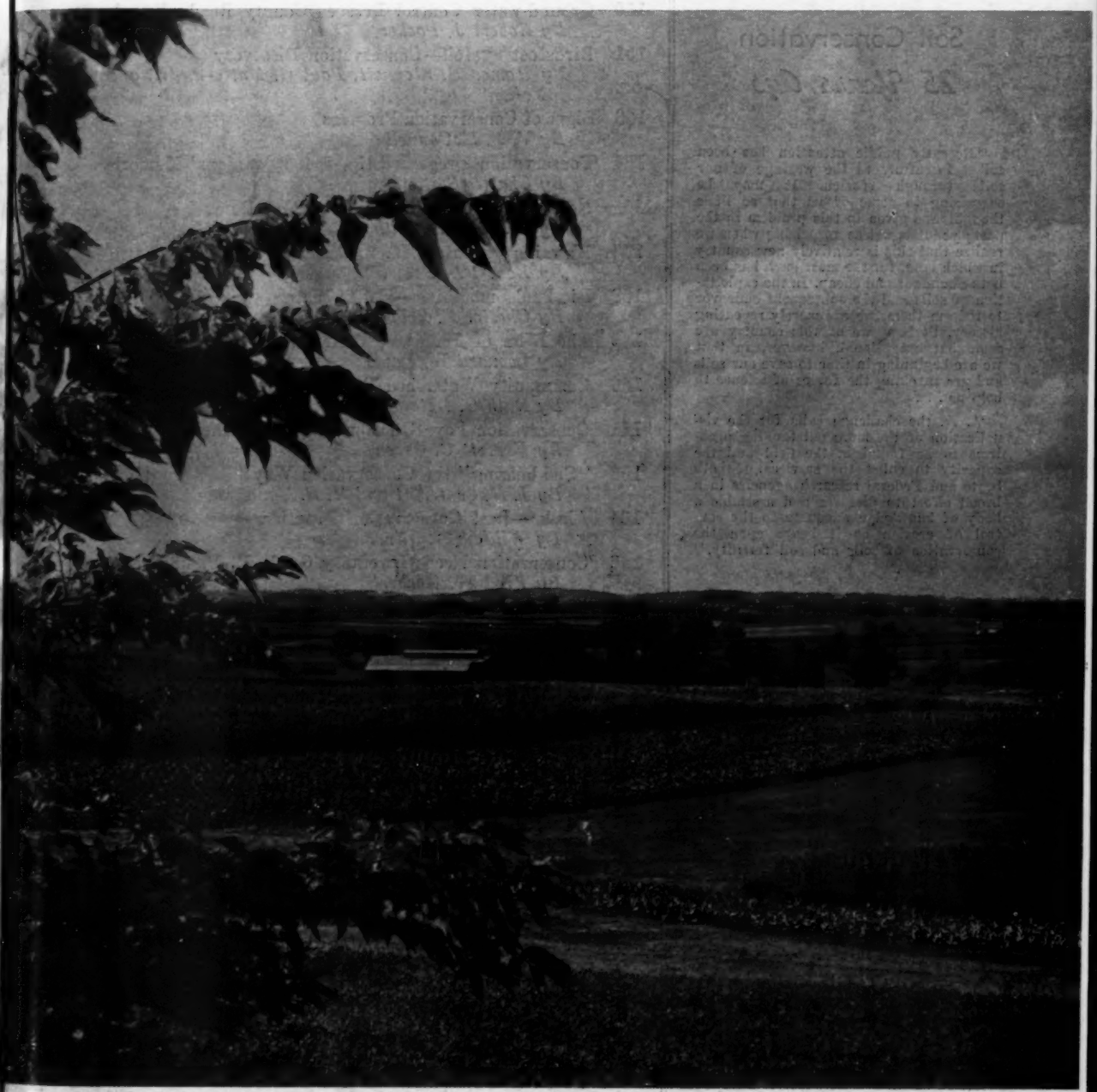
TECHNOLOGY & SCIENCE

FEBRUARY 1963

Soil Conservation



SOIL CONSERVATION SERVICE • U. S. DEPARTMENT OF AGRICULTURE

OUR SOIL ★ OUR STRENGTH

Soil Conservation
25 Years Ago

"Recently public attention has been called forcefully to the wastage of our soils through erosion. It may be surprising to some of us that so little thought was given to this problem in the past; yet it is not so surprising when we realize that this is relatively new country in which land, for the most part, has been both abundant and cheap. In the exploitation of soils and the subsequent endeavor to redeem them, we are merely repeating history. Perhaps we of this country are somewhat exceptional, however, in that we are beginning in time to save our soils and are invoking the forces of science to help us . . .

". . . the challenge calls for the visualization of the more outstanding problems to be found in the field and the capacity to enlist the services of both State and Federal research agencies in a broad effort to discover and assemble a body of knowledge adequate to the control of erosion as it bears upon the conservation of soils and soil fertility."

COVER PICTURE—Winter snows will give way again to scenes like this near Millersville in Lancaster Co., Pa., which attest to the way soil and water conservation land use has spread across the United States.

—Photo by William R. Berkland

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Soil Conservation

ORVILLE L. FREEMAN
Secretary of Agriculture

DONALD A. WILLIAMS
Administrator, Soil Conservation Service

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FRANK B. HARPER, Editor

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The True Measure of Conservation Progress

By Donald A. Williams

CONSERVATION progress around the Nation may be measured in at least two ways. One is by conventional figures on the planning and application of soil and water conservation practices on farms and watersheds. The other is by looking behind such statistical accounting of accomplishments and noting their beneficial physical, economic, and social effects.

The latter is the true measure of conservation progress, though such results obviously could not be realized were it not for the calculable accomplishments behind them. Soil and water conservation as we have seen it spread during the last 30 years is not, and never has been, carried on for the sake of conservation itself alone. It has been, on an ever-broadening scale, to further the well-being of all the people—on the farm, in both rural and urban areas, in communities large and small—statewide, regionally, and nationally.

Thus conservation treatment not only protects the land from erosion and depletion, but it results in use of land better to serve the needs of its users, be that for agriculture, recreation, or other purposes. By the same token, water conservation measures as they are developed today not only are aimed at preventing floods and erosion and sedimentation, but also at assuring the availability of water for similar multiple uses by all the people.

The public interest includes both long-time conservation of our soil, water, plant, and wildlife resources and continued economic growth. Examples mount daily as we move ahead in this new year of 1963 of how this conservation program contributes directly to improved efficiency in agriculture, which, in turn, contributes directly to the Nation's total economic growth.

On the basis of cooperative soil surveys, research information available to them, and experience, soil conservationists provide land users with practical information about the alternate uses of different kinds of soil. Their work, in cooperation with responsible State and local agencies, especially soil conservation districts and watershed organizations, has helped materially in increasing efficiency and flexibility on farms. Such flexibility has permitted production to be changed from that of farm products having a low elasticity of demand to those with a high elasticity, as from wheat or potatoes to beef or fruit.

Such shifts in land use, in other words, have tended to reduce crops in oversupply, even in cases where other factors may have operated to maintain or to increase them. About two-thirds of the land shifted out of crop uses through the Great Plains Conservation Program, to illustrate, previously had been in feed grain, principally, and wheat and cotton. Although it is not the specific purpose of this program to reduce surplus crops, but rather to help bring about greater agricultural stability through accelerated soil and water conservation designed to cope with hazardous climatic and soil conditions, the effect of this shift has been a net reduction in total production of these crops.

Similarly in the South, shifts

By the late 1930's soil and water conservation measures already were beginning to protect the land like this near Garnaville, Iowa, on an extensive scale and to help build more prosperous communities.

Note:—The author is administrator, Soil Conservation Service, Washington, D.C.

In the fifties, watershed protection and flood prevention projects began taking conservation beyond individual farm boundaries. This dam, finished in 1960, is in Jefferson County, Kans.

from row crops to pasture or to managed woodland, especially for pulpwood, continue to be made, as do this same kind of conservation conversions all over the country, with comparable effects. Anywhere, these conservation adjustments in land use also show that we do not need to grow crops on soils that give low returns for what is put into them but that, by fitting our uses of the land to the soils and other factors determining its capability, we can avoid both waste and scarcity in production when and in amounts needed.

Other conservation adjustments, which are receiving increased emphasis, likewise have shown that we do not need to have housing, industrial, and other nonagricultural developments encroach upon our best agricultural land. Soil and water conservation planning has been drawn upon successfully more and more in the location and preservation of recreational and wildlife areas so important in the competition for land space and water acreage that grows keener every year.

The breadth and depth of our conservation undertakings are reflected in these major efforts which are being accelerated all along the line, and in which the Soil Conservation Service cooperates by providing technical or cost-sharing assistance: Soil conservation district programs; small-watershed protection and flood prevention projects; the Great Plains Conservation Program; the Rural Areas Development program; and farm recreational and other undertakings on non-Federal lands. These and other broadened soil and water undertakings authorized in the Agricultural Act of 1962, affecting farm and nonfarm interests as well, indicate how today's land- and water-use adjustments indeed are designed to serve the needs of all the people.

The adjustments taking place today through operation of these and other programs, like the Agricultural Conservation Program, are essential to the Number 1 policy objective emphasized in the Department of Agriculture's Land and Water Policy Committee report of May 1962, "Land and Water Resources—A Policy Guide." It is: "Resource uses that will yield continuing maximum benefits," including that of promoting desirable other uses for lands not needed for agricultural production.

Changing our uses of presently cultivated land, for an indefinite time or permanently as conditions and needs may dictate, is receiving more attention and positive action today on the part of those concerned with agricultural and related land use than it ever has before. The authorizations contained in the 1962 Agricultural Act for developing long-range land-use adjustment programs at national,

By the sixties, not only rural areas but rurban areas and cities were reaping conservation benefits—here in stream channel protection on Mad River along Main Street of Winsted, Conn., in the Litchfield SCD.

Today, recreational facilities have been added to the dividends paid by watershed and other conservation developments like this lake in Madison County, Tennessee's Johnson Creek watershed.

State, and county levels, provide the most recent example. It is particularly significant that the Act opens the way to agreements for taking land out of cultivation based on conservation plans developed by farmers and ranchers. The provision for land-use adjustments on a long-term scheduled basis is similar to that which has worked so successfully in the Great Plains Conservation Program started in 1957.

The fact remains that we have in this country more cropland—good, productive cropland and that which is in cultivation that should not be—than we now need; and such an accelerated positive program for putting this overacreage into productive grass, trees, wildlife, recreational, or other beneficial uses is a move in the right direction. The findings of the Land and Water Policy Committee that some 50 million fewer cropland acres will be required to meet our needs by 1980 is confirmed by those of the National Inventory of Soil and Water Conservation Needs completed in 1961 by the Department in cooperation with Federal, State, and local agencies and organizations in 3,000 counties.

We are fortunate as we face these broader adjusted uses of the Nation's land and water resources that we now have had nearly a third of a century of experience in developing and perfecting conservation technologies and mechanisms for putting them to extensive use for individual and public benefit. This principally through the programs of 2,935 farmer-organized and farmer-managed soil conservation districts, embracing 93 percent of the country's farmland and 96½ percent of its farms, and in small-watershed projects serving multiple community or other area purposes.

Out of approximately 1,825 applications received from local organizations since this program's start in 1954 for Federal technical and cost-sharing assistance on watershed projects, 816 have been approved for planning. Of these, 450 have been authorized for operations, with 78 of them completed. Watershed projects are proving to be increasingly valuable as a means to furthering rural area and recreational developments, in addition to, or as a part of, their flood prevention, watershed protection, and multiple water-development purposes. In at least one-third of the projects which have been approved for operations, the structural measures have purposes other than watershed protection or flood prevention.

The progress the people of the United States have made toward safeguarding their indispensable soil and water resources between 1933 and 1963 adds up in the data-processing machines to a record of which all the Nation may be proud. Even more gratifying is the fact that from land or air the mural of conservation may be seen as it spreads across the land. But the painting is far from being finished, as the conservation needs inventory so unmistakably confirms. With the growing number of new conservation "tools" which are or will be available, however, we reasonably may expect in another 30 years to see the major remaining panels filled in, and this land of ours made secure for the support and enjoyment of the generations to come.

Have You Seen?---

- "Classifying Rangeland for Conservation Planning," by F. G. Renner (retired) and B. W. Allred, Soil Conservation Service, USDA Agriculture Handbook 235. The main items included in the bulletin are discussions of range sites, standard soil surveys, and range condition; examples of range sites and range-condition classes; and the use of information on range sites and range condition in conservation planning.
- "Soil Surveys," by the Soil Conservation Service, USDA Picture Story 146. There are at least 70,000 different kinds of soil in the United States. A soil survey explores the limitations of land for specific uses. The SCS now maps about 50 million acres each year, and has surveyed more than 821 million acres, or more than a third of the Nation's land. This folder tells of the many uses made of the soil survey.

Conservation Ground-water Control Rescues County Road—Farmland

By Robert J. Packer

A GROUP of Treasure County farmers in Montana found that they could solve their problem of a high and rising water table in productive irrigated land by working together through their soil conservation district.

Some of their land wasn't productive any more, because it was waterlogged and so salty that it no longer produced good grass. The situation was so bad, in fact, that a 1½ mile section of county road became so wet it was abandoned. Cropland which had produced good crops of sugar beets, corn, hay, and irrigated pasture was becoming less productive. The ground-water table was rising slowly, bringing a little more alkali to the surface each year.

Six of the farmers from the seeped area asked for help in March 1955 from the Treasure County Soil Conservation District. The district supervisors asked the Soil Conservation Service to see what might be done. In November, the SCS, at the district's request, drilled and cased some 70 test wells in the area.

The distance from the water in the test wells to the surface of the ground was measured and recorded each month for the next year. Service engineers then made a survey of the area and established the ground elevations at each test well. By plotting the ground-water contours on a map, it was possible to fix the direction of ground-water movement. This information, combined with the test-well logs, provided the basis for a remedial drainage improvement plan.

By the time the plan was ready in the fall of 1958, another group of farmers, who farmed the Hysham Bench just above the seeped area, had become interested. They felt that if they could use the proposed drain as an outlet for their waste water, they could afford to contribute toward the cost of construction. The Hysham-West drainage group now involved 19 operators and about 5,700 acres.

The members agreed on an equitable share of the cost to be borne by each individual, and drew up a trust agreement. A pooling agreement assured the group that about half the cost would be paid for with Agricultural Conservation Program funds. A contractor agreed to wait for the ACP payment to the group before collecting full payment for his work.

The drainage plan called for crossing a large irrigation canal, a natural drainageway, two county roads, the railroad, and a highway. Officials of all of these facilities had to be dealt with; and powerlines, telephone lines, and fences had to be crossed.

Work began in the spring of 1959, four years after the original six farmers had asked for help. The results were gratifying from the start. Ground water poured into the new ditch. At one point, the dragline operator was forced to shut down for a day to let water drain away. The first 6,500 feet of construction went according to plan.

The ditch was planned to follow the county road for about 4,500 feet. Conservation-minded county commissioners agreed to let the operator pile the soil on the road. It later was spread out to raise the roadbed about 2½ feet.

Finally, after waterlogging and other obstacles were overcome, one portion of the drain was completed. Another part was started, and late in 1959 the end of construction appeared in sight. About 1,000 feet of excavation and the highway crossing remained.

As the ditch neared the highway,

Stabilized portion of Hysham-West Drain. Note salt accumulations on ditchbanks.

Note:—The author is work unit conservationist, Soil Conservation Service, Hysham, Mont.

Part of ditch along railroad tracks west of Hysham, showing mud boils from artesian pressures.

so much water was encountered that it was impossible at that time to go on, and the contractor shut down for the rest of the winter in hopes that by spring some of the artesian pressure would lessen. Work did resume in the spring and, although the ditchbanks still were not fully stable, it was possible to install the highway crossing. Conditions were better beyond the highway, and the excavation was completed early in 1960.

More than 160,000 cubic yards of earth was moved, and about 1,200 feet of metal pipe was installed, at a total cost that far of $62,490. The railroad crossing alone cost $8,383. The great amount of water encountered, coupled with areas of unstable soil, caused the cost of construction to rise sharply. The ACP cost-share payment of $28,654 was made available. Completion of the job called for leveling of the spoil banks, with the ditch to be cleaned and brought down to grade as soon as the banks were stable.

Benefits were apparent immediately, and more are showing up. Spots which would "bog a saddle blanket" have dried so they can be crossed with a pickup. An abandoned county road again is open. Fields are being farmed on which it was impossible to use machinery.

One farmer had a well which had become unusable because the high water table had increased the concentration of salts. After the drain was dug, the water table dropped, and the water was usable again. The local elevator had been plagued with water in the grain pit. This problem was helped by the drain. There will be other benefits which can't be measured, including decreased maintenance costs on the railroad and highway roadbeds.

As one member of the group said: "The drain not only benefits us farmers; it is helping the whole community."

Birdsfoot Trefoil Conservation Discovery

By Homer E. Stennett, Paul G. Mattern, Jr., and Guy C. Fuller

THIRTY years ago we were looking for a high producing forage legume that would grow almost anywhere. Birdsfoot trefoil, which now grows almost everywhere in rural New York, and in other parts of the country, turned out to be the answer.

Its blossoms make a yellow blanket along New York's country roads and superhighways. In the villages it can be seen along the curbs, on vacant lots, and even in lawns. On the farms, it ranks with alfalfa as one of our two most valuable legumes.

Note:—The authors are area conservationist, Soil Conservation Service, Wellsville, N.Y.; associate agricultural agent, Extension Service, Ellicottville, N.Y.; and former agronomist, Soil Conservation Service, Macomb, Ill.

Birdsfoot trefoil with grass yields high-quality forage for many years with reasonably good management.

Birdsfoot will stand a wide variety of conditions. It will grow on poorly drained or droughty soil. William Howe, Cattaraugus County, N.Y., agricultural agent, says "It is giving alfalfa (equivalent) production to many farms which could not normally maintain long-lived forage."

Paul Almeter in Allegany County has a 12-acre field of birdsfoot trefoil on a poorly drained soil drained by a diversion ditch system. In 1962, a drought year, the field was mowed the middle of June and yielded 112 tons of grass silage. It was pastured afterward, and Almeter estimate the field would produce 3½ to 4 tons of hay equivalent.

The trefoil is long lived Roy Lane in Cattaraugus County planted a 2-acre field on a trial basis in 1939. He has harvested hay and pastured the field every year since. It still is producing so well that he has no intention of plowing it.

Karl Chamberlain of Cattaraugus County made a 1-acre pasture planting in 1939. From that acre, the trefoil has spread all over the farm. A sign by the side of the road proudly proclaims the name Chamberlain gave the farm—"Birdsfoot Acres."

Birdsfoot trefoil beautifies the countryside. Fields growing trefoil are green shortly after the snow goes. It progresses from a green to a yellow green as blossoms begin to show.

In many places where trefoil was used to seed diked ponds 10 to 12 years ago, the unmowed and ungrazed trefoil has grown higher and denser, providing excellent food and cover for wildlife. Trefoil also has other benefits. It improves the tilth of the soil, causes greater insoak of water, and reduces runoff.

Trefoil first was discovered in the United States growing in the Hudson Valley in the 1930's, by Frederick Eisenhard of the Soil Conservation Service. Professor Johnstone-Wallace of Cornell identified it. Somehow, not intentionally, it had been brought from Europe where it was known even in ancient times.

Seed pod from which birdsfoot trefoil gets its name.

The plant spread rapidly in the Northeast and in parts of the Corn Belt and the Pacific Northwest. County Extension agents hurried its spread, through an educational program, as did Soil Conservation Service men through their fieldwork with farmers. Soil conservation district supervisors bought seed and resold it to district cooperators, to seed down construction areas of disturbed soil.

It was in these ways that birdsfoot trefoil was introduced onto thousands of farms, until today, in New York State first, and then in almost all of the Northeastern States, growing birdsfoot trefoil has become one of the leading practices for conserving soil and water.

Twenty-one northwestern Illinois counties provide another example of how birdsfoot trefoil has been moving into a prominent place as a pasture legume. Reports from the soil conservation districts in this Illinois area show that more than 6,000 acres of pasture with trefoil as the only legume in the mixture has been established in the last half-dozen years. Farmers and SCS technicians report that the principal reasons for interest in this forage crop are long life for a pasture legume, elimination of the bloat problem, and the high feed value and palatability of trefoil for all kinds of livestock.

Interest of a few farmers became apparent around 1950, when soil conservation district cooperators began trying out trefoil in comparison to other legumes. Much has been learned since about how to establish good stands. Knowledge of its soil requirements, management needs, and general environmental conditions was needed, because trefoil was a new plant in this area. Farmers, SCS technicians, farm advisers, and seed dealers have ferreted out the steps necessary in its establishment.

When correct seeding techniques are used, failures to obtain stands of trefoil have been no more frequent than with any other legume. Also, birdsfoot trefoil can fill a gap in a conservation program on steep and irregular topography, because of its long life and high feeding qualities. Research data show that trefoil-bromegrass pasture will yield returns in pounds of beef comparable with those from alfalfa-bromegrass.

At the Albia, Iowa, Experimental Farm, for example, trefoil was a slow starter; but, by the third year, trefoil-and-bromegrass was producing as much beef to the acre as alfalfa-and-bromegrass. With a reasonably good management program, the trefoil pasture was expected to be productive for many years.

The acreage increase in Illinois has resulted from a need for good pastures on farms where either beef or dairy cattle are an important part of the operation, and where the topography, soils, and climate are all favorable for the establishment and long life of trefoil pastures. When trefoil is established on land best suited for pasture, it provides effective erosion control, and brings greater financial returns.

◆

Fifty years ago, it took 100 minutes of farm labor to grow a bushel of corn;—today, with mechanized farming, only 10 minutes.

SIGNS OF CONSERVATION PROGRESS

By V. P. McConnell

THOUSANDS of soil conservation district and individual district cooperator identification signs along the country's roadsides graphically point up soil and water conservation progress in the decade and a half since the first known sign was put up in the West Side Soil Conservation District in Idaho in 1948.

That sign, on the west side of Idoho Falls, had to come down after a dozen years or so of service, to make way for a new interstate highway. The supervisors had the old sign—one of four erected in 1948—varnished to preserve it, with a view to having it kept in the National Association of Soil and Water Conservation Districts' archives at League City, Tex.

The Association, through which the districts and their cooperators for a number of years have been able to order manufactured metal signs, reports that about 50,000 signs now dot the countryside. Some four thousand of these are roadside signs marking district boundaries, and 45,000 or so are smaller signs proclaiming that farmers or ranchers are district cooperators.

The granddaddy of them all was planned by the original board members of the West Side district: Chairman Emil C. Johnson, Thure Anderson, Lowell C. Moore, Norbert Brinkmann, and Walter Pancheri. They also obtained financial help from local business houses for building it and the other three signs to let people know they were traveling in the by then 4-year-old district.

"You Are Now Entering the West Side Soil Conservation District," the first sign read. It also conveyed information on the total area in the district, the number of acres under irrigation at the time, and the names of those who provided the sign.

"We received lots of recognition for our district from those who saw the signs and from publicity at the time we installed them," Johnson recalls. "Folks commented favorably about them at conventions of State and national associations of soil conservation districts."

Five new baked enamel signs reading, "Entering the West Side Soil Conservation District," now stand at main entrances to the district. Each of the present supervisors assumed responsibility for the erection of one sign, in frames made of 1½-inch pipe and set in concrete. Today's supervisors are Brinkmann, chairman; John Gellings, Lowell Moore, Hollis Beaker, and Hugo Hockwart.

Note:—The author is work unit conservationist, Soil Conservation Service, Idaho Falls, Idaho.

Nation's first SCD sign gives way to new metal sign. (L. to r.): Chairman Norbert J. Brinkmann of West Side district board of supervisors; Emil C. Johnson, first district chairman; and author.

◆

A newspaper item explaining the much greater cost of one airport's construction over that of another airport in the same area concluded:

"One reason was that the search for good soil on which to put runways paid off. Its runways required only 16 inches of concrete; (the other) has patches of soil which pack so poorly that 36 inches of concrete had to be laid."

Conservation Progress

Stirs Pennsylvanians' Memories

By Charles Slaton

Pennsylvania's first SCD director, John Smith, reviews charter granted Black Lick district in 1938.

Early demonstrations, with much of the work done by hand, paved way for modern conservation program.

THE hills of Pennsylvania's Indiana County hold fond memories for many of today's soil conservation farmers. It was here in the 1930's that scores of new recruits joined in the early erosion control demonstrations in the Crooked Creek Watershed Project. They proved that land and people can co-exist, and became the cadre for a new crusade which has changed the landscape.

In those trial-and-error days, men like John Smith were true pioneers. Living on the outside edge of the demonstration area, Smith watched the new experiments in controlling erosion on his neighbors' farms. And he liked what he saw.

Dairyman Smith became the first soil conservation district director in Pennsylvania upon organization of the Black Lick Soil Conservation District, including parts of both Indiana and Cambria counties, later expanded to separate county-wide Indiana County and Cambria County districts.

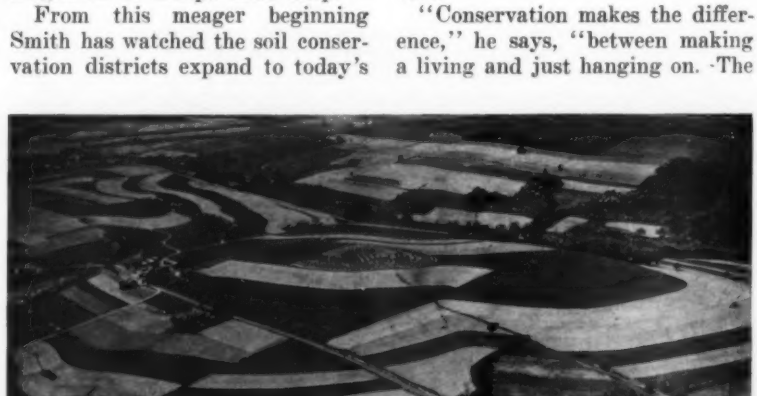
"Back in 1938 we were able to get 10 townships together," Smith, now an octogenarian, recalls. "Most of the land was hilly, the soil was washed, and the yield was poor. The farmers were in pretty bad shape. Back then we didn't have the proved ways for using our land properly. Those of us who tried the new ideas of the Soil Conservation Service technicians were considered odd. And it took a great deal of coaxing to get some of our neighbors to accept their help."

From this meager beginning Smith has watched the soil conservation districts expand to today's 60 districts that take in about 92 percent of all the farmland in the Commonwealth. Today, patterns of soil and water conservation can be seen almost everywhere, and conservation has become a way of living in many parts of the State.

Another conservation pioneer who aided in getting Pennsylvania's first district started is John Stephens. Talking conservation, attending meetings, and encouraging farmers took up a great deal of his time back in 1937. During the district referendum, he hauled voters to the polls in his pickup truck. At 26 he became a member of the first board of directors.

Stephens believes that soil conservation is a major reason the family farm has been able to survive.

"Conservation makes the difference," he says, "between making a living and just hanging on. The



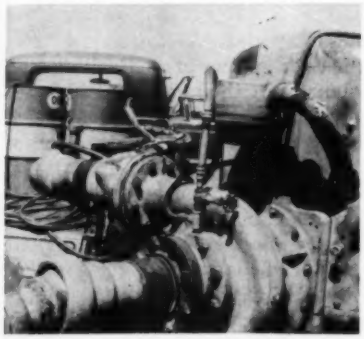
Patterns of land-protecting and water-conserving measures like this 1949 contour stripcropping near Danville today may be seen from one end of the Keystone State to the other.

Note:—The author is assistant to the State conservationist, Soil Conservation Service, Harrisburg, Pa.

fellows who went along with the program got a lot of benefits. For the most part they are the more prosperous farmers today.

"Today it's a source of pleasure to see conservation on the land wherever I go in Pennsylvania. Back in the late thirties, this wasn't so. Our big job then was to get farmers to plant trees, use more lime and fertilizer, fence out the woodlots, strip-crop their fields, and improve their pastures. The early district served as a catalyst in helping to get these practices more generally accepted."

John Smith and John Stephens have been part of a conservation crusade which has changed the landscape of Pennsylvania. They have witnessed 25 years of progress in soil and water conservation, but they will tell you that the big job is still ahead.



Hose connected to irrigation pump and inserted in fertilizer drum.

New Way To Fertilize Grass on New Dams

By William L. Smith

AN effective and economical method of applying liquid nitrogen to hasten the growth of vegetation on small-watershed dams was developed and used by Soil Conservation Service employees in the Trinity River watershed in Texas during the summer of 1962.

Newly built floodwater-retarding structures in areas where the soils are erodible must have a cover of grass established quickly to prevent damage by water erosion. Irrigation during dry periods, application of nitrogen, and such other conservation treatments as weed control and regulated grazing made it possible in some cases to establish a good turf in the one growing season

W. G. Ely, SCS technician at Denton, developed the method. Where the dams and spillways are to be irrigated, the application of liquid nitrogen in the irrigation water saves the expense of applying the pelletized form of fertilizer prior to the irrigation. This saving has amounted to approximately $5 an acre for each topdressing.

Note:—The author is agronomist, Soil Conservation Service, Denton, Tex.

Adaptation of the sprinkler irrigation system to apply the liquid nitrogen was simple and inexpensive. The vacuum line to the irrigation water pump was disconnected and the fitting removed. This fitting was replaced by a pipe nipple, and a tee was installed on the nipple. This arrangement permitted the vacuum line to be reinstalled, along with a valve and hose adapter. Once the hose was connected, the other end was placed in the barrel containing the liquid nitrogen fertilizer.

The objective was to apply the 55-gallon drum of fertilizer in about 30 minutes, to insure uniform distribution. By making measurements of the fertilizer depth with a gage stick at 5-minute intervals, Ely was able to check the amount used, and to regulate the rate of application by adjusting the valve accordingly.

Distributing liquid nitrogen on bermudagrass on floodwater-retarding dam through sprinkler irrigation system.

Hawaii's Land Operators Bak

By Rob[illegible] B[illegible]

Soil saving—field of pineapples planted on the contour in the West Kauai SWCD.

CONSERVATION of soil and water resources is big business in Hawaii today.

In the 1962 fiscal year alone, for example, farmers, ranchers, and other land operators in the 50th State dug down into their pockets and spent some $2,600,000 for developing conservation programs on their lands. This money was in addition to such assistance as the technical services of the Soil Conservation Service through Hawaii's 16 soil and water conservation districts and cost-sharing provided by the Agricultural Conservation Program.

What are they getting for their money? Year by year district records give the answer. They show, among other accomplishments, that these land operators in the 1962 fiscal year extended contour farming to approximately 16,500 more acres; put cover and green manure crops on 850 acres of truck crop-lands; utilized crop residues on more than 23,500 acres; and established cropping systems that protect the soil against erosion and conserve water on 16,000 more acres.

Other means of controlling and managing their resources developed during the year included more than 240,000 linear feet of field diversions built, 13,500 feet of irrigation canals and laterals installed, and more than 7,000 feet lined to prevent water losses. These canals and laterals, along with one new irrigation reservoir, supply water to irrigated fields, of which nearly 14,400 acres had water management applied in accordance with the needs of the crop and the soil.

Soils in parts of Hawaii are subject to wind erosion. To protect them to assure crops, operators planted 14 acres of tree windbreaks and made 92 acres of critical-area plantings on their croplands. Brush and scrub trees were cleared from 5,000 acres to make

Water saving—concrete irrigation ditch skirts sugarcane field in West Oahu SWCD.

Note:—The author is State conservotionist, Soil Conservation Service, Honolulu, Hawaii.

Bak Conservation With Dollars

By Rob L. Brown

way for improved pastures, which were seeded on nearly 4,500 acres of this land and on grassland on which only poor species were present. Nearly 40,000 acres of poor pasture also was renovated to improve the grass stand.

Rotation grazing was practiced on more than 5,100 acres, and 182,500 acres of pasture and range was used in such a way that stands will be improved. Because proper use of range requires water development, the soil conservation districts' operators used 54,700 feet of pipeline to supply 130 troughs or tanks with water that made possible better distribution of livestock and better grass management.

Land that had been an erosion hazard was made useful by more than 800 acres of forest tree planting with species that before long will become a useful timber crop.

Water for thirsty cattle—stockponds on the Parker Ranch in the Mauna Kea SWCD.

Improvements during the year to provide good habitat for big game and upland game birds included developing five wildlife watering facilities in the more arid areas.

Grassed waterway carries water safely off of this field in the West Oahu SWCD.

To help land operators with the planning and application of their conservation program, soil scientists of the Soil Conservation Service mapped more than a third of a million acres of privately operated land, bringing the total mapped to date to 1,887,755 acres, or 46 percent of the total land area of the State.

During the year, 155 land operators with 202,000 acres in their holdings became cooperators with the State's locally managed soil and water conservation districts.

The work land operators have done in applying a conservation program on their lands will have lasting benefits to the soil, water, and plant resources of the State. It is estimated that, in financial benefits alone, for each dollar spent the returns will be multiplied from 2 to 20 times.

Thus it is that conservation is assuring an improved land for present and future generations in Hawaii.

Plowed ricefield being flooded before leveling.

Field being leveled in the water.

Field remains under water after leveling.

Young rice growing in leveled field.

Riceland Smoothing—*Under Water*

By Chester F. Bellard

UNDER-water smoothing of land with conventional dryland smoothing equipment is a growing conservation practice being used by farmers in the rice-producing area of Louisiana.

They have found that the benefits of land smoothing far outweigh the cost. Other advantages include: Better drainage, making earlier planting possible; more even distribution of water, thus requiring less water to produce a rice crop; better weed control; and uniform ripening of the crop for increased quality and yields.

Technical help on this and other conservation practices by technicians of the Soil Conservation Service is provided to farmers cooperating with soil conservation districts in keeping with basic conservation plans.

The Rice Experiment Station personnel at Crowley conceived the idea of leveling fields in water. A levee is built around the entire field, which is plowed and then flooded until the lower half is completely covered with water. This permits the operator, using a regular farm tractor and hydraulically controlled leveling blade, to see high areas, which are cut down and brought into the water. After all such protruding areas have been eliminated, the water remains on the smoothed field until all the silt has settled out.

Note:—The author is work unit conservationist, Soil Conservation Service, Alexandria, La.

A field can be smoothed in water for less than half the cost of doing the same job on dry soil. Another advantage of this method of leveling is that the work can be done anytime, even during rainy seasons.

Judging by the number of farmers who have used this method with good success, indications are that this will become the accepted method of land smoothing in this area.

The Dean Of Tennessee Districts

AS the sun rose on April 19, 1870, over the Cumberland Mountains of the Eastern Highland Rim in Tennessee another American patriot made his entrance on the stage of life. He was Beecher C. Huddleston, who later was to be known as the "Dean of Soil and Water Conservation Districts" in Tennessee.

Born of pioneer stock, Judge Huddleston, who was Putnam County judge from 1926 to 1942, bought his first piece of land in 1899. The 40-acre tract, originally owned by his grandfather, was part of a land grant for services rendered during the Revolutionary War. The land had been abandoned for many years, because of erosion and low productivity, and the price of $5 an acre almost exhausted Huddleston's life savings.

The future looked dark for the young farmer and his 4-year-old orphaned son, but the land had to be made to produce a living. First, he turned to conserving the soil. There was no large earthmoving equipment available in those days; so Huddleston cut brush to plug gullies, made rock dams, plowed in gullies with a team of mules, and began the long, hard struggle with limited resources and "know how" toward reclaiming his rundown farm.

When Putnam County farmers organized a soil conservation district in 1940, the long, tireless task of reclaiming his original forty, with little knowledge as to land use and treatment, was fresh in Judge Huddleston's memory. He was among the first to develop a basic soil and water conservation plan on his farm, which had grown to 180 acres, and he helped lead his neighbors in the local conservation movement.

He was elected as a district supervisor and secretary and treasurer in 1944, and held these positions until his retirement in December 1961.

In August 1946, the Judge and other supervisors of the State met at Peabody College in Nashville and organized the Tennessee Association of Soil Conservation Districts, of which he was elected vice-president for middle Tennessee.

When the Tennessee Watershed District Act was enacted in 1954, Judge Huddleston also was instrumental in organizing the Dry Valley and Roaring River Watershed districts in Putnam County.

During 18 years, he missed only one local district board meeting, because of illness, and did not miss a single area or State meeting. At the 1961 State meeting the 92-year-old dean of soil and water conservation in Tennessee gave this challenge to the delegates: "For our Nation to remain strong, this organization must continue to be always on the move toward a more vigorous district program."

—LEONARD W. DAVIS

Judge Huddleston welcoming supervisors and watershed directors to 1962 meeting of Tenn. Assn. of Soil and Water Conservation Districts.

Community Watershed Project Brings Many Benefits

By Ruth C. Metz

George Davis with largemouth bass caught in water behind Ray Coatney dam.

WATERSHEDS come in all sizes. Compared to the "average," Frog Hollow in north central Kansas is in the thumbnail class. It is a fine example, though, of the way farmers are solving tough problems through their own combined efforts with a measure of Federal technical and financial help.

There are 4,300 acres in Frog Hollow—nearly seven sections—in Ottawa County. Frog Hollow is in the lower reaches of Salt Creek watershed—a big one involving 300,000 acres. Salt Creek has organized a watershed district under Kansas law and has requested assistance under Public Law 566. Frog Hollow is a model for the people in the large watershed. They can see firsthand how their flooding, silting, and erosion problems can be solved.

The problems of the people in the area in the mid-fifties were common to that part of Kansas—heavy rainfall causing damaging runoff, washing out crops, fences, roads and bridges, and eating away cropland. The entire flood plain had been damaged by silting almost every year.

The late Ray Coatney was the farmer who first decided something should be done. He lived where two creeks come together. His upland was eroding, and his lowland was being damaged by silting. Fence repair was an annual expense.

After talking with his neighbors and learning that his problems were theirs, too, Coatney got in touch with the Soil Conservation Service, the County Agricultural Stabilization and Conservation Committee, the county Extension agent, the County Commissioners, and the Ottawa County Soil Conservation District supervisors, who offered their cooperation in finding a solution.

SCS technicians working with the district chose tentative sites for six floodwater-retarding dams, but first helped farmers develop conservation plans for necessary land treatment on 24 of the 30 farms in the area. Owners got ACP cost-share help on terraces, waterway shaping, and grass seeding.

The years 1954, 1955, and 1956 saw much conservation work ac-

Frog Hollow watershed with J. E. VanMeter detention dam in foreground, Willard Sechrist dam at extreme upper right, and Ward White terraces, shelterbelt, and farmstead.

Note:—The author is area clerk, Soil Conservation Service, Manhattan, Kans.

complished. Silting was being reduced. The farmers had built enough terraces and waterways, and seeded enough of the cropland to grass for construction of the dams to start, under ACP pooling agreements with all the benefiting farmers contributing. Five of the dams were completed in 1956, and the relocated sixth dam in 1959.

Since the dams were built, Frog Hollow farmers have speeded up their land treatment. They built more than 1.5 miles of flowways. They planted shelterbelts, wildlife habitats, and grass. About 85 percent of the conservation practices needed to protect the land have been installed.

Farmers, county officials, and the community all are pleased with results of the Frog Hollow community watershed project. Gerald Sechrist, for example, says he hasn't had to touch a fence that used to wash out several times a year. And the late Lee Baccus said at first he didn't believe his rain gage, after the work was done. Formerly, a 2-inch rain would flood his fields; now there's a controlled flow down the valley instead of a "gully-washer." Baccus lost 30 to 40 acres of wheat almost every year before the dams were built. A son, Vince, who now operates the farm, says they received the cost back in 1 year from the crops saved.

County Commissioners reported that the expense of keeping up roads and bridges in the area already has been reduced. On the black-top road between Minneapolis and Ada, a small bridge could not span the heavier flows; but since the dams were built and the flow rate reduced, the bridge is adequate. There's practically no roadbed damage now.

The six dams are providing protection for 436 acres of flood plain and also furnish abundant livestock water. They cost $12,525, of which ACP cost-shared $8,170. Some of the farmers believe the total area for fishing and boating—37.4 surface acres at primary spillway level—is in itself well worth the price paid. This is a bonus, of course; because the prime benefit of the project is protection of their investment in their land.

The community is enjoying recreation advantages, as the lakes behind the dams are stocked with fish. For instance, when George Davis took his children to the Coatney Dam on one fishing trip, three other families already were there, and more arrived until the bank was lined with fishermen. These dams attract local people as well as some "regulars" from Minneapolis, Delphos, and Ada. Fishing is good—and mighty popular!

Conservation Pays Off For Oregon Rancher

By Everett C. Green

ALTHOUGH he "grew up" on the Fort Rock Valley ranch he now operates Merritt "Bud" Parks has learned new things about the soil that are paying off handsomely—thanks to a Soil Conservation Service soil survey. A member of the Board of Supervisors of the Fort Rock-Silver Lake Soil Conservation District and member of the Oregon State Soil Conservation Committee, he learned how his land could be treated for most efficient production and maximum conservation.

With the program well under way and new things learned about soil-plant relationships, Parks said he is "using improved soil and water management practices to increase yields of alfalfa and intermediate wheatgrass hay from 2½ to 4 tons an acre." He also has used smooth brome with alfalfa.

Parks (l.) and neighbor Bill White look over intermediate wheatgrass planting.

Water management long has been important on the Parks ranch, because of droughty soils and low rainfall. Without the conservation of water, little forage would be harvested for feeding cattle and horses during winter.

Bud said he and his father thought of using level border irrigation on fairly flat land as far back as 1932, but it was not until after the soil conservation district was formed on March 19, 1953, that they were able really to try it out—even then on a small scale.

The acreage of level border irrigation is increasing year-by-year on areas that are almost level before any work is done on them. Several people have asked Parks why he used level borders instead of the sloping kind often used by others. Here's the payoff he cites:

The time it takes to prepare the soil for planting and irrigation is

Note.—The author is soil conservationist, Soil Conservation Service, Silver Lake, Oreg.

Stockwater at many locations is key to Parks ranch grazing utilization.

cut almost in half. He can do the job with the equipment on the ranch. The amount of water required to produce a crop is almost one-half. It is easy to start crops. Labor to irrigate is less, and it takes less attention by the irrigator.

With level borders, two irrigations a season are all that are needed to grow 4 tons of alfalfa-grass hay. The sloping kind would require four irrigations.

"Forage production for livestock is important on a ranch of this kind," Bud said. "I have been improving my range by planting grasses that are adapted to the soils and climate. Crested wheatgrass has done a good job for me. It has been used a great deal by the Bureau of Land Management for the re-establishment of forage plants on land that has been allotted to me for my own use."

Most soils in the Fort Rock Valley are sandy and subject to severe wind erosion if allowed to remain barren. To eliminate the wind-erosion hazard while preparing rangeland for seeding to grass, Parks removes the sagebrush in approximately 200-foot strips. He seeds rye for a year or so, until the brush has been killed by cultivation, after which the brush is planted to adapted grass. Then when the grass strips have become established, the strips of brush between the grass strips are removed and seeded.

Giant wildrye grass is being grown from seed that Bud collected from native plants. He also has grown some Idaho giant wildrye grass from seed furnished by the SCS, for winter pasture with a protein supplement.

Hauling water to livestock on the range is done on the Parks ranch with good success. As a result, no area becomes abused, because the cattle usually are well distributed over the range in a way that large numbers do not collect in small areas. The increase in extra pounds of beef has more than paid for the expense of hauling water into isolated areas.

Alfalfa-grass hay like this Parks is stacking is part of his conservation payoff.

Parks believes not only in soil, water, and plant conservation, but in wildlife conservation. He has built farm ponds to provide water for antelope, birds, and deer. Small grain for wildlife food and cover is made available in small, isolated areas surrounding cultivated fields. This Fort Rock rancher has been cooperating with the Oregon State Game Commission in its safety program by putting up signs that say: "Hunting by Permission." He also has provided habitat for Chukar partridge recently introduced into the area.

Cattle on rye pasture planted in strips prior to seeding grass.

"Sod-busting" the Conservation Way

By J. H. Senterfitt and H. E. Van Arsdall

"SOD-BUSTING" reminiscent of yesterday's West is being used in Florida today but with an important difference. Here the land is periodically returned to grass in a sod-based conservation rotation instead of being kept continuously in cultivation and subject to soil erosion like that which led to dust-storms in the Great Plains.

Bill Beasley is one of those who has taken advantage of this practice to restore and maintain production on his farm. He considers bahiagrass "the best thing that ever happened to Florida." To most people this means good cattle grazing; to Beasley it means cattle grazing plus wind erosion control, better soil, and bigger crop yields.

Beasley began to rotate bahiagrass pasture with cultivated crops as the principal feature of his soil and water conservation plan worked out with Soil Conservation Service technical help through the Levy Soil Conservation District. He plowed out his first 40-acre field of bahiagrass in the fall of 1956. Watermelons, planted in the spring of 1957, were his first crop. With the usual fertilization, he produced 900 melons to the acre—about twice his usual production.

Alyce clover for hay followed the melons, followed in turn by a blue lupine cover crop plowed under for corn in the spring of 1958. After corn harvest that fall, the field was reseeded to Pensacola bahiagrass.

Thus a 2-year cultivation period between periods in which the land was used for pasture started the sod-based rotation system. Most of the Beasley farm now has 3 years of sod between cultivated crops; but his goal is 4 years in sod to 1 year in cultivation.

"I am looking forward to when I expect to have 800 acres in bahiagrass and 200 acres in cultivation," he said. "To do this I will have to reduce my corn acreage. With the sod rotations, the use of cover crops, and good fertilization, I believe I can produce all the corn I need on less land."

In talking about some of his experiences with sod rotations, Beasley told about his 1958 peanut crop:

"I planted a 12-acre field following a bahiagrass sod," he recalled. "I intended to harvest this crop as part of my peanut market allotment. During the season, however, another field planted on old cropland looked better, and I changed my mind. The peanuts dug from the cropland field produced only 1,200 pounds an acre. I ran 70 head of hogs for 90 days on the 12 acres of peanuts on the sod land, and I am sure I would have harvested at least a ton of peanuts an acre had I dug them."

By the next year, his peanuts following a bahiagrass sod yielded 1,600 pounds of nuts an acre, despite wet weather, a late harvest, and loss of many of the peanuts.

With all the benefits of grass in maintaining soil productivity, its normal use remains that of providing feed for cattle. The income from cattle and the sale of grass seed harvested each year now are important items in the overall farm picture in this area.

Although Beasley is a strong believer in Pensacola bahiagrass, he realizes there is a place for other grasses on most farms in his district. He has 137 acres of pangolagrass. This grass furnishes summer grazing, just as the bahiagrass does; but its chief use is for winter grazing, as it stands up better than bahiagrass and furnishes grazing for a longer period.

Supervisors of the Levy district in 1959 selected Bill Beasley for the Florida Bankers Association Award as "Outstanding Conservation Farmer" in the district.

Bill Beasley in watermelon field in May holds piece of 8-year-old sod turned in January.

Note:—The authors are work unit conservationist, West Palm Beach, and agronomist, Lake City, both of the Soil Conservation Service, Florida.

Alaska—land of vast distances and beauty—invited and challenged these soil surveyors as they took to the field for early surveys in the Fritz Creek area near Homer.

Alaska—
Last Conservation Frontier

By William B. Oliver

ALASKA is the United States' last frontier for soil and water conservation development as it is for farming generally.

Conservation, more recently undertaken in the 49th State than in the older parts of the Nation, so far is measured here less in acres, feet or miles, or numbers of individual soil-saving and water-management practices that have been planned or applied than in terms of progress in finding ways of dealing with unfamiliar land-use problems. One such problem peculiar to Alaska, for example, is that of "permafrost"—a frozen layer of saturated soil just beneath the surface soil, which melts unevenly when the land is cleared, causing level land to become hummocky and highly erodible.

In seeking practicable preventive conservation techniques to use in dealing with such problems, soil surveys—dating back to the first reconnaissance surveys made at the turn of the 1940's—are uncommonly important in determining the course of the State's future conservation program and measures used.

Many factors affect this new State's agricultural development. In Alaska, the soil conservation district program accordingly takes a somewhat different approach than in older, more developed areas of the United States. Its cooperators start in most instances with virgin soils.

Alaska is a land of vast distances and marked climatic differences, and its agricultural areas rank among the smaller of the States. Three-fourths of Alaska is in the north temperate zone, the remainder being north of the Arctic Circle. Precipitation varies from as much as 150 inches annually in the southeast to an average of only 12 inches in the Tanana Valley. The

Note:—The author is State conservationist, Soil Conservation Service, Palmer, Alaska.

growing season ranges from an average of 160 days along the southeastern coast to from only 90 to 80 days in the central Tanana and upper Yukon Valleys. The southern coastal sections seldom experience zero weather in winter; whereas, in the interior, the temperature may drop to as low as 70° below zero for short periods in the winter, and rise to more than 90° above zero during the summer.

Southeastern Alaska has only a few scattered areas of coastal plain that are suited for agriculture. At higher latitudes—in the area just south of the Alaska range—lies the most promising agricultural area, and it has about two-thirds of the State's population. This area embraces three large river valleys—the Copper, Matanuska, and Susitna—and the Kenai Peninsula.

North of the Alaska Range, the Tanana Valley is another area of considerable agricultural potential. It is one of the first areas in interior Alaska that had agricultural development—gardens and small farms developed during the gold rush days of 1898 to 1902 to produce vegetables for miners and forage for livestock. In addition, Kodiak and a number of islands in the Aleutian chain have extensive native grasslands which, with careful land use, it is believed some day will support a profitable livestock industry.

Commercial agriculture in Alaska started in the Tanana Valley on a small scale in the early 1900's, and in the Matanuska Valley in the 1930's. Today, most agricultural activities are confined to the Matanuska and Tanana Valleys and the Kenai Peninsula, with approximately 20,000 acres harvested. Crops include hay and pasture for livestock, oats and barley, and row crops such as potatoes, lettuce, cabbage, and carrots.

With the coming of commercial agriculture, manmade erosion soon became a problem. When the protective vegetative cover is removed for farming, the land becomes subject to both wind and water erosion. Soil surveys are needed to guide the safe use of this land, and to evaluate particularly the agricultural potential of different areas.

Despite a lack of development capital, competition from surpluses in the older 48 States, and lack of marketing facilities, Alaskan farmers are optimistic. Homesteaders are clearing land and making plans for its future use. Federal and State agricultural agencies are helping them. Supervisors of the 10 soil conservation subdistricts have recognized the need for land development in long-range plans of operations—stressing the need for farm development plans based on land capabilities and conservation treatment. Thus they are promoting land-clearing practices which will remove only native vegetation and moss, leaving valuable topsoil in place.

Soil Conservation Service technicians assigned to the Alaska Soil Conservation District have completed more than a decade of soil survey work in the State. More than 2 million acres have been surveyed. Approximately 42 percent of the land surveyed is suitable for tilled agriculture.

Soil surveys are used both as a basis for guiding settlement and for planning development of individual farms. They also are used as basic data for tax assessments, by the University of Alaska in selecting endowment land, and by the Alaska Department of Lands in classifying lands for sale and management purposes.

Much of the unprotected land in the Matanuska Valley is subject to severe damage from north (Matanuska) winds in the winter, and from east (Knik) winds in the spring when soils are being prepared for planting. The most effective way of preventing wind erosion damage on row-crop land has been found to be a combination of crop rotations, windbreaks, and stripcropping.

Water erosion is a constant threat on the light and unstable soils in Alaska. Serious damage has been experienced frequently in the Tanana Valley, where sloping fields subjected to runoff from snowmelt and summer showers erode severely when unprotected. In areas where agriculture is just becoming established, erosion control measures are being developed

Improved pastures for livestock feed and land protection, like this one at the Alaska Experiment Station at Fairbanks, are important in the State's conservation program.

Fairbanks SCD supervisor Russ Wood planting potatoes on the contour. He planned to have all of his future cropping operations likewise on the contour.

along with other general farming practices.

Streambank protection is needed along some Alaska rivers. Structures such as log or rock jetties and riprapping, along with tree plantings, are used to prevent bank cutting. Meanwhile, draining of waterlogged areas and installation of sprinkler irrigation systems also are helping land development and soil and water conservation programs in Alaska.

The conservation program in this still unfolding agricultural area provides a unique opportunity to develop the State's agriculture on the basis of sound land use—to gear this program to land capability by classifying soil resources and fitting them into a proper pattern of cropping, grazing, woodland production, and industrial and recreational uses.

In this connection, district supervisors are active in the Rural Areas Development program for Alaska. They realize that Alaska needs to develop timber, water, and mineral resources as fully and rapidly as possible to provide additional markets for agricultural products.

In Alaska, the emphasis is upon "preventive" conservation rather than upon repairing damage already done. In other words, it is a case of "doing" the right things with the land and not so much of "undoing" the wrongs like those that were done in other States—before soil and water conservation came along.

Grass seeded conservation drainage ditch on road to Wildwood Station north of Kenai.

Conservation Needs Inventory Guide To County Planning

By Fred W. Herbert

AUTHORITATIVE basic information for use in gaging future development of a number of California counties is being drawn from findings of the recently completed National Inventory of Soil and Water Conservation Needs. This study was made by the U. S. Department of Agriculture under leadership of the Soil Conservation Service in cooperation with Federal, State, and local agencies and private interests.

Findings of the inventory as pertaining to southern California, for example, were included in a publication, "Southern California Agriculture—A Look Ahead to 1970 and 1980," compiled and distributed by the Agricultural and Natural Resources Departments of the Los Angeles Chamber of Commerce. Chairman W. E. Tesche of the projections subcommittee of the agricultural committee stated that "the inventory confirmed the fact that the necessary land resources would be available in connection with our projection of continued expansion in crops and livestock in the southern California counties."

Paul N. Williams, economist of the California State Chamber of Commerce, stated that his organization is using the inventory in studies of the economy of various regions, made at the request of cities, counties, local chambers of commerce, and others.

"Counties particularly want to know just what they have in the way of resources so that they will

Note:—The author is retired assistant State conservationist, Soil Conservation Service, Berkeley, Calif.

know in what direction development can go," he said. "The needs inventory, along with the land-classification information, is very valuable to us in these studies."

El Dorado County was among the first in the Nation to publish an inventory report, in August 1959. The county planners feel that El Dorado County fast is becoming a scattered residential area, bringing up difficult and complex problems relating to schools, utilities, and taxes. They quickly realized that the inventory would provide the basic information necessary for planning to help solve these problems. Accordingly, the committee was re-activated, enlarged, and renamed "The El Dorado County Resources Utilization Committee." It has published a 94-page report entitled, "The Long Term Outlook for the El Dorado County Livestock Industry," and other studies are under way.

In Kern County, the conservation needs inventory report stated that "it gives an overall picture of the land situation at present, it provides a basis on which to measure expected land use, it can be used in program planning and developing short and long period goals, to determine where to place emphasis on conservation education and in general to guide all who are interested in conserving these basic natural resources."

Kern County's report points out further that the inventory information may be very significant to the county's people and economics in the next 15 years in view of expected increases in population and farm production capacities. Although, according to the 1959 census, Kern County ranks second among the Nation's top agricultural counties in terms of value if products sold, it still has thousands of acres of undeveloped land. The way in which this land will be utilized is of tremendous importance. Intelligent planning, based on reliable information, will make possible the most beneficial use of the county's soil and water resources.

In Santa Clara County, the inventory committee pointed out that the Santa Clara Valley has been "one of the unique places on the face of the earth because of its mild climate, long growing season, rich, deep alluvial soil, abundance of water, and nearby markets." All these factors worked together to create a combination of circumstances ideal for intensive production of pears, apricots, prunes, cherries, strawberries, vegetables, and other speciality crops.

For almost 100 years, city-farm relations in Santa Clara County remained in proper balance. Crop yields became steadily larger, and finally most of the Class I and Class II soils were farmed intensively. Since World War II, however, urbanization has become one of the major problems. In a single decade, population increased from 280,000 to 600,000, and cropland decreased from 247,000 to 187,000 acres. The statement is made in the county inventory that, "if nothing is done to check the shift from agriculture to industry, we may see cropland completely disappear from the valley floor."

In Stanislaus County, the inventory report was published by the County Planning Commission. The inventory committee went on record with the statement that: "The value of a group study and analysis was amply demonstrated. It was apparent that the data would be of value to local as well as national planning." The committee indicated that the report will stimulate public thinking that will result in planning to accommodate the increasing population with the least possible injury to the agricultural economy of the county.

In San Bernardino County, where flood protection is of vital importance, a considerable portion of the county's published inventory is devoted to watershed project needs. Ninety-one watershed areas were delineated, and 7 projects totaling nearly ¾ million acres were listed. These already have been considered as meeting the

City of Santa Rosa protected by Central Sonoma Watershed Project.

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criteria for assistance under the Watershed Protection and Flood Prevention Act.

Publication of the county report was financed by five soil conservation districts. The report is made available as a public service to agencies and individuals concerned with proper land use.

The inventory data also have been used by the California State office of the Soil Conservation Service in describing the extent of various land uses and soils within resource areas for technical guides; and by the Western States office of the Economic Resource Service in its report on "Long Term Production Prospects for Western Agriculture."

The inventory classification of land as irrigated, dry farmed cropland, and pasture and woodland grazed, has been used by the Agricultural Stabilization and Conservation State Committee as "indicated needs" guides in allocating ACP funds to counties.

◆

Alaska, our largest State, had only 367 farms in 1960, the Bureau of the Census reported. About half of these were part-time farms, with the operators working 100 or more days off the farm. Sales of farm products totaled $3.2 million in 1959—less than 7 percent of the income from fishing, Alaska's largest private source of income.

First District Cooperator Honored By Family and NACD

Mrs. F. Y. Sorrell stands with Gov. Terry Sanford of North Carolina during 1962 dedication ceremonies of a granite marker to her late husband as the Nation's—and the world's—first soil conservation district cooperator on their farm south of Ansonville.

The deed to the plot on which the monument stands was presented to President Marion S. Monk of the National Association of Soil and Water Conservation Districts by Rep. A. Paul Kitchen of Wadesboro on behalf of the family of Dr. Sorrell. Monk also accepted for the Nation's more than 2,900 soil conservation districts a copy of the district contract for the Sorrell farm and a copy of the Brown Creek district charter. The marker's inscription reads:

On This Farm Was Developed the First Conservation Farm Plan in the Brown Creek Soil Conservation District; the First Soil Conservation District Chartered in America.
This Site Deeded to the National Association of Soil and Water Conservation Districts on August 7, 1962, by the family of Dr. F. Y. Sorrell, the First District Cooperator

(See SOIL CONSERVATION, "Historical Marker," page 72, October 1962.)